

REMARKS

A. Request for reconsideration

Applicants have carefully considered the matters raised by the Examiner in the Office Action but remains of the position that patentable subject matter is present. Applicant respectfully requests reconsideration of the Examiner's position based on the Claim Amendments and following remarks.

B. Request for One-month Extension of Time

Applicants respectfully request one month extension of time to answer the outstanding Office Action. The fee is concurrently paid with this online filing.

C. Claim Status and Amendments

Claims 1-22 and 24-25 are presented for further prosecution. Claim 23 has been cancelled and claim 25 has been added. Claims 3-7 and 23 have been deemed allowable if rewritten in independent form. Claims 9-15 have been indicated containing allowable subject matter.

Claims 1-2 have been amended to include further limitation, which is basically the limitation of claim 23.

Support to these amendments can be seen from paragraphs 9-12 of the published application and at figures 8 and 9.

Claim 16 has been amended to further include the limitation of cancelled Claim 23.

Claims 5 and 18 have been amended to eliminate redundant limitations, due to the amendments to the base claims.

Claim 3 has been amended to focus on the limitation of arrangement and Claim 25 has been added to recite the constitution limitation cancelled from the amended claim 3.

In addition, claims 8, 15 and 24 have been amended according to the Examiner's suggestion. Claims 9 and 16 have been further amended on the wordings according to the conventional US practice.

No new matter is added by the amendments.

D. Claim Objections

Claims 8, 15 and 24 had been objected to on formality issues. Claims 8, 15 and 24 have been amended to remove the formal defects.

Claims 18 and 19 had been objected to as conflicting with the base claim. Because of the amendments to Claim 16, the applicants respectfully submit that claims 18 and 19

are now consistent with Claim 16, as the two wordlines WL1 and WL2 are parallel. This feature can be seen at Fig. 9.

E. Prior Art Rejections

Claim 1 has been rejected as anticipated by Li; Claims 2 and 8 has been rejected as anticipated by Pakata; and claims 16-22 and 24 has been rejected as anticipated by Nguyen.

1. Claim 16 and its dependent claims 17-22 and 24 are patentable over Nguyen et al.

Claim 16 has been amended herein to include the limitation of cancelled Claim 23. Claim 23 had been indicated as containing allowable subject matter. Thus it is submitted that Claim 16 and its dependent claim 17-22 and 24 are now allowable.

In particular, Claim 16 now recites a distinctive feature that "the writing operation of the information of the magnetic film cell MFC (2) is implemented by corporate effect of a current parallel to the magnetic film cell MFC (2) on the bit line BL (3a) and a current introduced from the word line WL2 (3g), vertical to the magnetic film cell

MFC (2) and passing through the magnetic film cell MFC (2)".

In contrast, Nguyen does not disclose such a feature of providing only one current line parallel to the MFC and branching a part of the current to flow vertically through the MFC. Nguyen is based on spin transfer effect (see the abstract and paragraph 0028-0030), which is the conventional old art different from the present invention. Therefore, Nguyen can not anticipate Claim 16 and its dependent claims 17-22 and 24.

2. Claims 1 is patentable over Li.

Claim 1 as amended includes a distinctive feature, namely: "writing operation of information in a magnetic film cell MFC of the MRAM is implemented by corporate effect of a current parallel to the MFC and vertical to an easy magnetization direction of the MFC and a part of said current being branched vertical to the MFC and passing through the MFC".

This limitation is basically a more specific rephrasing of the limitation of the allowable Claim 23. It is discussed in the paragraph 9-12 in the published

specification. In the present invention, the current parallel to the MFC and the part of said current being branched vertically to the MFC and passing through the MFC are interrelated to generate corporate effect to perform the writing operation.

In contrast, Li only discusses performing writing operation by using magnetic fields generated by three separate currents, such as word line current, sense line current and digital line current. Obviously, Li needs three separate lines to write, which corresponding to the conventional technology the present invention is to improve.

3. Claim 2 and its dependent claim 8 are patentable over Pakata et al.

Similar to the amendment to Claim 1, Claim 2 has been amended to point out that the writing operation of the information of the magnetic film cell MFC (2) is implemented by corporate effect of a current parallel to the MFC(2) in the bit line BL (3a) and a current branched from the bit line BL (3a) vertical to the MFC and passing through the MFC. Utilizing the corporate effect of magnetic fields generated by the parallel current and the branched

vertical current and the branched current introduced into the MFC itself, the writing operation of the MFC can be effectively performed.

Different from the present invention, Pakata discloses that the magnetic element 130 shown is a spin tunneling injunction, and it is switched by spin-polarized current(see page 1 Col. 2 of Pakata). It does not teach performing writing by corporate effect generated by providing only one current line parallel to the MFC and branching a part of the current flowing vertical through the MFC as in the present invention. In addition, Pakata does not disclose placing "a current parallel to the MFC" "vertical to an easy magnetization direction of the MFC".

It is respectfully submitted that, without teaching the specific feature claimed in Claim 2, Pakata can not anticipate Claims 2 and its dependent claim 8 and the new claim 25.

In summary, the distinctive feature of corporate effect of a current parallel to the MFC and vertical to an easy magnetization direction of the MFC and a part of the current being introduced vertically to the MFC and passing


through the MFC reduces the number of lines and number of the metal wiring layers and the contact holes, and greatly reduces the complexity of MRAM's structure, and difficulty and cost of manufacturing the same. This feature distinguishes the present invention from cited references and the invention as claimed is patentable over the cited references taken alone or in combination.

F. Conclusion

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance and such action is respectfully requested. Should any further fees or extensions of time be necessary in order to maintain this Application in pending condition, appropriate requests are hereby made and authorization is given to debit Account # 02-2275.

Respectfully submitted,

LUCAS & MERCANTI, LLP

By: 
Yaodong Chen L0267
Attorney for Applicant(s)
475 Park Avenue South
New York, NY 10016
Tel: 212-661-8000